

## TRI-FOLD PERSONAL COMPUTER WITH TOUCHPAD AND KEYBOARD

### RELATED PATENT FILING

This patent specification has been filed concurrently with and is cross referenced to assignee's related patent specifications Ser. No. 08/866,002 and Ser. No. 08/866,003.

### FIELD OF THE INVENTION

This invention relates to a mobile personal computer system with a front panel display hinged from the cover of the personal computer, and more particularly to a compact notebook computer which houses a flat panel touchpad display foldable into and out of the cover of a portable personal computer with a keyboard.

### BACKGROUND OF THE INVENTION

Today's notebook computers provide many valuable characteristics. They are small and light. They are battery operated and easily portable. They are highly integrated and have no cables in their basic configuration, making them easy to set up and move. However, these products have typically been very business-oriented (i.e., they do usually feature an overabundance of high-quality multimedia capability relative to typical home computers) and also, they have been priced much higher than a desktop PC of equivalent function.

In contrast, a typical desktop PC provides a great deal of processing and multimedia capability at very competitive prices. However, these systems are not small, and generally not lightweight. They operate only on AC-power, and they generally have a multitude of cables. The combination of size, weight, and cabling makes these systems quite unwieldy to set up, and typically requires the user (both at home and at the office) to dedicate a significant amount of space and furniture for the desktop PC.

Many customers, however, do not value some notebook attributes such as extremely low weight and substantial battery life, but would prefer a smaller footprint or space occupied by the unit, simpler cabling, and easier transportability than a typical desktop computer provides. In the business world, such a product might be useful in dense, "open" office layouts where cubicle space is at a premium.

In the home market, many users cannot afford to dedicate a lot of space for a desktop PC. Possibly, they may already have one or more desktop PCs and don't want to dedicate another large space for their next PC. Indeed, they might prefer to fit their next PC into existing spaces, such as on a child's bedroom desk, a small desk in their kitchen, or perhaps even on the kitchen counter. Space efficiency is particularly important in many countries, including Japan just to mention one, where the typical unmarried or single person, it has been reported, typically lives in a 340 square foot apartment, while a typical family of four (parents plus two preschool children) lives in a 750 square-foot apartment.

If possible, of course, customers would prefer that these smaller machines cost no more than a much larger desktop PC. That is presently not the case and not possible under today's manufacturers' profit goals, because of the high cost of many notebook computer components, including the liquid crystal display, low-power processor, physically smaller HDD, FDD, and CD-ROM drives, and more complicated electronic and mechanical packaging. Nevertheless, some competitors are beginning to address these consumer

needs with products reminiscent of the old "luggable" computers. However of those known to date, none provide any additional capabilities over a normal PC. What is needed is a device which provides the before stated needed features and in contrast, provides significant new capabilities, as well as the enhances portability and space savings achieved by incorporating some notebook technology into a compact desktop design.

It should be noted that there have been several recent, but failed attempts at providing small-footprint desktop PCS which utilize flat-panel displays, PCMCIA cards, and other notebook packaging techniques. So the success of another design targeted at similar goals is certainly not guaranteed. These earlier attempts, however, suffered from (1) an even higher cost differential between LCD and CRT displays than currently prevails, (2) the choice to provide a standard analog interface to a stand-alone LCD monitor, which increased costs still further, and (3) a serious lack of expandability in the small form factor boxes. The display cost differential, while still substantial, has diminished somewhat. Furthermore, the industry is moving towards the concept of a sealed PC, where expansion is accomplished though the addition of external modules connected via a high-speed serial bus such as the IEEE 1394, a.k.a. "Fire-Wire" specification. If a small-form-factor PC can be designed so that all basic functions are provided via internal components which can be easily upgraded, and if expandability for a typical or new functions are easily provided through industry-standard 1394-based external modules, then much of the need for a large, mostly empty system unit disappears.

### SUMMARY OF THE INVENTION

Provided is a hybrid packaging design for a portable personal computer that combines elements of both desktop and a notebook computers with unique new features to provide additional user functionality and flexibility. In a basic form, the best device comprises a tri-fold mechanical structure with a touchpad display screen and a detachable keyboard which is stowable within the case of the computer structure. The innovation is enhanced with features which include a touch-screen display overlay, a stylus, a wireless remote control, and various docking/support stations. The combination of these items enables a wide variety of new usage scenarios, and allows the system to receive wide acceptance from the user community and adapts well to a wide variety of home and office situations.

### BRIEF DESCRIPTION OF THE DRAWINGS

The invention is pointed out with particularity in the appended claims. The stated advantages of the invention may be better understood by referring to the following detailed description in conjunction with the drawings in which:

FIG. 1 is a perspective view of the foldable display screen opened across the base of the notebook computer for touchpad actuation with the stowable remote keyboard disposed within the body of the notebook according to the principles of the present invention;

FIG. 2 is a perspective view of the foldable display screen folded back and disposed before the cover of the notebook computer for touchpad actuation with the stowable remote keyboard disposed before or in front of the display screen and over the base of the computer according to the principle of the present invention;

FIG. 3 is a view of the notebook with the cover partially closed and the display screen laid flat and disposed before